

## **ABSTRACT**

An epistemic engine system and methods are provided, which accept biological data from experiments or other sources, and automatically produce a model, such as a genomic and protein interaction network, which attempts to explain the operation of a biological system. The system and methods identify interrelationships among components of a biological system, consistent with the biological data and other life science knowledge. In preferred embodiments, evolutionary algorithms are used, in combination with information from a life science knowledge base and experimental data, to generate models that may identify these interrelationships. The output of an epistemic engine permits scientists to better understand biological systems, to propose hypotheses, to build more complete models, and to propose new experiments to test the validity of their hypotheses.